

Fascist Italy's Aerial Defenses in the Second World War

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ABSTRACT

This article focuses on Fascist Italy's active air defenses during the Second World War. It analyzes a number of crucial factors: mass production of anti-aircraft weapons and fighters; detection of enemy aircraft by deploying radar; coordination between the Air Ministry and the other ministries involved, as well as between the Air Force and the other armed services. The relationship between the government and industrialists, as well as that between the regime and its German ally, are also crucial elements of the story. The article argues that the history of Italian air defenses reflected many of the failures of the Fascist regime itself. Mussolini's strategy forced Italy to assume military responsibilities and economic commitments which it could not hope to meet. Moreover, industrial self-interest and inter-service rivalry combined to inhibit even more the efforts of the regime to protect its population, maintain adequate armaments output, and compete in technical terms with the Allies.

KEYWORDS

air defenses; Air Ministry; anti-aircraft weapons; bombing; Fascist Italy; Germany; radar; Second World War

Introduction

The political and ideological role of Italian air power worked as a metaphor for the regime as a whole, as recent historiography has shown. The champions of aviation, including fighter pilots who pursued and shot down enemy planes, represented the anthropological revolution at the heart of the totalitarian experiment.¹ As the Fascist regime had practiced terrorist bombing on the civilian populations of Ethiopian and Spanish towns and villages before the Second World War, the Italian political and military leadership, press, and industrialists were all aware of the potential role of air

1. Eric Lehmann, "Il fallimento dell'aeronautica italiana," in Nicola Labanca, ed., *I bombardamenti aerei sull'Italia. Politica, Stato e società (1939–1945)* (Bologna: Il Mulino, 2012), pp. 161–67.

forces—both bombers and air defenses—in deciding any future conflict. Well into the Second World War, propaganda posters depicted powerful anti-aircraft batteries hitting enemy planes and targeting others with searchlights. Newspapers described the first enemy raids in Italy using apocalyptic images of aerial combat.² However, reports from prefects and political police informers throughout the country showed that the population's views on Italy's air defenses were generally negative from as early as the summer of 1940, when the first Royal Air Force (RAF) raids on Italian industrial cities and ports made it evident that enemy aircraft were able to bomb unopposed. After the first raid on Turin during the night of 11–12 June 1940, the ineffectiveness of the air defenses around the Fiat factories became evident to the workforce, who, as a result, "began to doubt the regime's propagandistic optimism."³ The reality was visible to the naked eye, despite reports to the contrary published in Italian newspapers.⁴ During the war, Italian air defenses were frequently mentioned in jokes, rumors, and even prayers. Air defenses were generally described as non-existent or useless, when they were not regarded as a danger to the population.⁵

This mistrust was well placed. Italy, especially at the outset of the war, relied on extremely primitive defenses. Instead of using radar to detect enemy aircraft, a system of "aerophones"—acoustic listening devices—was put in place, often operated by blind people who were considered to have better hearing. Aerophones were linked to information-gathering centers, in turn connected to the Anti-aircraft Territorial Defense Command (DiCaT) which issued orders to fire.⁶ Anti-aircraft batteries were equally antiquated, most dating from the First World War; before 1940, no funds had been found to update either the means of detection or the available weaponry.⁷

The Ministry of Popular Culture (the Italian propaganda office) did not seem to have fully realized the extent of the malfunctioning of the defense system even as late as 1942. That year, film director Roberto Rossellini produced at Cinecittà his film *Un pilota ritorna*. The heroic account of an

2. Marco Fincardi, "Anglo-American Air Attacks and the Rebirth of Public Opinion in Fascist Italy," in Claudia Baldoli, Andrew Knapp, and Richard Overy, eds., *Bombing, States and Peoples in Western Europe 1940–1945* (London: Continuum, 2011), p. 242.

3. Valerio Castronovo, *Fiat 1899–1999. Un secolo di storia italiana* (Milan: Rizzoli, 1999), p. 586.

4. Nicola Labanca, "L'esercito e la contraerea," in Labanca, ed., *I bombardamenti aerei*, p. 134; Luigi Petrella, *Staging the Fascist War: The Ministry of Popular Culture and Italian Propaganda on the Home Front, 1938–1943* (Bern: Peter Lang, 2016), pp. 59–65.

5. Claudia Baldoli and Andrew Knapp, *Forgotten Blitzes: France and Italy under Allied Air Attack, 1940–1945* (London: Continuum, 2012), p. 202; Baldoli, "Religion and Bombing in Italy, 1940–1945," in Baldoli, Knapp, and Overy, *Bombing, States and Peoples*, pp. 140–41.

6. The role of the DiCaT was, as explained in a decree of 1935, to predispose in peacetime, and to operate in wartime, the defense of the country from enemy air or naval attacks (Decree 181, 21 January 1935, *Gazzetta Ufficiale*, 16 March 1935).

7. Baldoli and Knapp, *Forgotten Blitzes*, p. 86.

Italian pilot who returned from the Greek campaign, the film presents images of an outdated aerophone system for detecting planes, and anti-aircraft guns only capable of firing at low altitudes as if they were up-to-date equipment.⁸ Instead, the DiCaT chiefly used for active defense the 1916 76mm anti-aircraft gun and the French Saint-Étienne M1907 machine guns from the First World War, mounted on special gun carriages in order to elevate their fire. The *Difesa Contraerea* (Dca – Air Defenses) established at the time of the First World War had provided a general summary of the situation as early as 1935, denouncing the lack of modern artillery, munitions, and qualified personnel. By 1937, not one of all the ninety-four Italian provinces had any funds for air defenses, and only 218 batteries out of a total of 930 were actually functioning, and the new 20mm machine guns were not yet available. In 1938, General Antonio Gandin, an Italian Army Chief of Staff and close collaborator of Marshal Pietro Badoglio, defined the air defenses as "absolutely insufficient"—a situation that had improved little by the time European war broke out in 1939.⁹

Another unresolved question concerned the state of air raid alarms. During the war, many alarms turned out to be false because the system for detecting enemy aircraft was imprecise. On other occasions, however, alarms only sounded when the bombs were already falling, resulting in high casualties and badly damaging morale. Outside the city areas, church bells often replaced sirens because the alarm system was not audible everywhere. As late as 1943, after the fall of Mussolini, bells were used as a contingency in case the system failed even in the cities.¹⁰ Moreover, as this article will show, for the Italians, there was too little German assistance in developing an effective air defense system, and what there was often arrived too late. At the same time, Italian industry was unable, with a few (and late) exceptions, to provide the armed forces with fighters and anti-aircraft weapons adequate for modern air warfare.

Although Italy's air power theorist Giulio Douhet had warned since 1921 about the frightful impact of air offensive in the next conflict, expectations about a future air war proved to be an inaccurate forecast of the actual conflict.¹¹ The regime could not have anticipated the vast tonnages dropped by the Allies in 1942-43. In addition to active defenses, a system of look-outs had to be organized, blackout provisions arranged, and an audible network of sirens installed. Shelters had to be built; gas masks supplied; the evacuation of (at least) children, the infirm, and the elderly planned.

8. *Un pilota ritorna*, directed by Roberto Rossellini, starring Massimo Girotti and Michela Belmonte, Italy: Alleanza Cinematografica Italiana, 1942.

9. Paolo Formiconi, "La protezione e la difesa contraerea del regime fascista: evoluzione istituzionale," in Labanca, *I bombardamenti aerei*, pp. 117, 122-24.

10. See, for example, Report of the Comando XV Corpo d'Armata, 31 August 1943, Prefettura, b. 155, Archivio di Stato di Genova, Italy.

11. Giulio Douhet, *The Command of the Air* (Washington, DC: Office of Air Force History, 1983; first Italian edition, 1921), pp. 189-90.

Emergency services had to be greatly expanded with the introduction of air raid wardens, rescue and clearance teams, and anti-contamination squads. Little money was forthcoming for these tasks, and the chiefs of staff of all three armed forces were doubtful in June 1940 about Italy's capacity to enter the European conflict with such a poor level of preparation for protecting the Italian population.¹²

The success of the regime's organization of active air defenses depended on a number of crucial factors: mass production of competitive anti-aircraft weapons and day and night fighters (which involved the availability of funds, raw materials, and machinery); a system for the detection of enemy aircraft by deploying radar in areas that were most in danger of being bombed; and coordination between the Air Ministry and the other ministries involved, as well as between the Air Force and the other armed services. The relationship between the government and industrialists, as well as that between the regime and its German ally, are also crucial elements of the story. While passive defenses have been explored in previous studies,¹³ this article will focus on Italy's active air defenses after briefly contextualizing them within the wider institutional air protection system.

Preparing for War: The Organization of Active and Passive Defenses

A series of laws on Italy's preparation for war were drafted throughout the 1920s and 1930s that sought to tackle all the potential problems air attack might cause: the organization of civil mobilization, rules on the construction of shelters, the protection of industrial sites, and the creation and coordination of institutions devoted to the country's defense. Most of these concerned civil defense. Under a law drawn up by the Air Ministry in 1939, the protection of industrial sites, whether privately or publicly owned, became compulsory; all the parties concerned were required to prepare a passive defense plan within three months of the law's passage, and to implement the plan within three years of its approval—that is, by 1943. The War Ministry was charged with ensuring implementation.¹⁴ There were four categories of industrial buildings: essential sites producing directly for the military, whose protection was to be wholly covered by the state; two intermediate categories in which costs were to be shared between government and owners; and other industrial and commercial buildings, the protection of which was entirely the owners' responsibility.¹⁵ A crucial coordinating body for passive defense was the National Union for Anti-

12. Nicola Della Volpe, *Difesa del Territorio e protezione antiaerea, 1915–1943* (Rome: Ufficio Storico dello Stato Maggiore dell'Esercito, 1986), pp. 38–39.

13. Baldoli and Knapp, *Forgotten Blitzes*, especially chapters 3 and 4.

14. "Schema di disegno di legge che detta norme per la A.A. degli stabilimenti industriali," n.d. (summer 1939), Ministero dell'Aeronautica (hereinafter MA), AG, 1939, b. 33, fasc. 24, vol. II, Archivio Centrale dello Stato (hereinafter ACS), Rome, Italy.

15. "Promemoria," Air ministry meeting, n.d. (June 1939); Decree 1672, 5 September 1938, MA, AG, 1939, b. 33, fasc. 24, vol. I, ACS.

Aircraft Protection (UNPA), founded in August 1934.¹⁶ UNPA's statute, approved by law in May 1936, established its headquarters in Rome under the direction of the War Ministry. Its principal task was disseminating knowledge of the dangers of air war throughout Italy. It was to produce propaganda, prepare the individual protection of the population, collect donations, oversee the construction of shelters for private citizens, distribute gas masks (and ensure that firms purchased them for their employees), and organize volunteer groups to collaborate with the police, the Red Cross, and the fire services.

However, such measures, desirable in themselves, were vitiated by fragmented competences in an uncoordinated administrative system. In 1931, the War Ministry was given responsibility for air raid alarm systems and active air defenses—except for air bases, which were defended by the Air Force, and ports protected by the Navy, each of which answered to its own ministry. In 1932, passive defense—previously entrusted to the Ministry of the Interior—came under the control of the War Ministry, although prefects, who remained responsible to the Ministry of the Interior, had to apply its directives. All this created overlapping responsibilities, confusion, and conflicts.¹⁷ These in turn provoked efforts at coordination. The War Ministry was to be aided by the Central Interministerial Committee for Anti-Aircraft Protection (CCIPAA), which brought together representatives of every ministry, the Red Cross, the Committee for Civil Mobilization, the military chemical branch, and the National Fascist Union of Engineers.¹⁸

Similar problems affected the organization of active defenses, where the lack of a unified command was debated throughout the war. Every time there was an attempt to unite the two networks of passive and active defenses, both the political authorities and the armed forces expressed their hostility to collaboration. Paradoxically, as Paolo Formiconi has observed, Mussolini, in the name of "unity of action at war," headed practically every ministry involved.¹⁹ In terms of active air defense, the Air Force with responsibility for fighter aircraft, the Army with its anti-aircraft batteries, and the Navy with its maritime bases all created overlapping and conflicting intentions, organization, technical material, and tactical methods, which in turn led to misunderstandings, delays, and wasted expense throughout the conflict.²⁰

Adequate funds were never made available for proper training in either

16. Decree 1539, 30 August 1934, MA, AG, 1939, b. 33, fasc. 24, vol. I, ACS.

17. Marco Gioannini and Giulio Massobrio, *Bombardate l'Italia. Storia della guerra di distruzione aerea, 1940–1945* (Milan: Rizzoli, 2007), p. 64.

18. Alfredo Giannuzzi Savelli, *Conferenza di propaganda per la protezione antiaerea del territorio nazionale e della popolazione civile. Anno 1931-X* (Rome: Istituto Poligrafico dello Stato, 1934), p. 10.

19. Formiconi, "La protezione e la difesa contraerea," p. 123.

20. Nino Arena, *La Regia Aeronautica, 1939–1943*, Vol. 1, 1939–1940. *Dalla non belligeranza all'intervento* (Rome: Stato Maggiore Aeronautica – Ufficio Storico, 1981), p. 72.

active or passive anti-air defenses. UNPA membership remained low at 150,000 in 1937, against eleven million for its German counterpart—while a single campaign in Britain in 1938 brought half a million recruits in just a few months. More money only came through in 1939 to help UNPA organize days of mobilization and anti-aircraft exercises, though these never succeeded in overcoming the skepticism of the Italian public.²¹ A February 1940 report by the Supreme Commission of Defense confirmed that the DiCaT lacked one-third of the necessary personnel, and that the Red Cross and the fire brigades suffered similar shortages.²² The number of firefighters was dramatically insufficient. Turin, Italy's most industrial city, had a mere 188 at the beginning of 1940; they sustained their first casualties on 14 August 1940 near Alessandria in Piedmont when an unexploded bomb was detonated.²³ In Italy, the emergency services entered the war undermanned and undertrained, especially in comparison with their British and German counterparts.

Both active and passive defenses were also enveloped by government propaganda that chose to present air power as an advanced technological achievement of the regime. A major consequence of this was the absence of any critical debate on the roles of active and passive defenses against bombing if war should come. There was little opportunity for the evaluation of results, for any discussion between central and local administrations, or for meaningful comparison with what was being implemented abroad.²⁴

Italy's Air Defenses on the Road to War: Anti-aircraft Weapons and Fighter Aircraft

By May 1940, the DiCaT had activated thirty-two "first-degree" localities defended by anti-aircraft artillery and automatic weapons and 265 "second-degree" localities with only antiquated automatic weapons.²⁵ At the start of Italy's European war, in June 1940, Italian fighter aircraft were equipped with a maximum of two small caliber weapons (either the Breda 7.7mm or Breda 12.7mm machine guns), while Britain had produced fighter planes mounting eight 7.7mm machine guns.²⁶ DiCaT commanders were aware of the limited weight of fire from Italian fighter aircraft. At the end of 1938, one anti-aircraft militia general made this deficiency clear in a memorandum he sent to the Air Ministry. In particular, he suggested that the caliber of onboard armament be raised to 37mm, or, if that was not possible for financial or technical reasons, at the very least to 20mm; any smaller caliber

21. Gioannini and Massobrio, *Bombardate l'Italia*, p. 80.

22. *Ibid.*, p. 59.

23. *Ibid.*, p. 83.

24. Giorgio Rochat, *Italo Balbo. Lo squadrista, l'aviatore, il gerarca* (Turin: UTET, 2003), p. 137.

25. Arena, *La Regia Aeronautica, 1939–1943*, Vol. 1, p. 73.

26. Andrea Natalini, *I rapporti tra aeronautica italiana e tedesca durante la Seconda Guerra Mondiale* (Cosenza: Edizioni Lionello Giordano, 2004), p. 11.

would have "a derisory effect."²⁷ As Gregory Alegi has argued, inadequate weaponry constituted a serious limitation for Italian fighters, which were equipped with only two 12.7mm guns for at least the first two years of the conflict; two additional 7.7mm guns were only added on later models, by which stage the German Bf109 fighters attached to the Italian Air Force carried five guns: two 13mm machine guns and three 20mm cannons. Alegi has calculated that the lethality index of a Macchi C.202 (with two 12.7mm and two 7.7mm guns) was 9.8, compared to a value of 38.6 for a British Spitfire Vb (with two 20mm cannon and four 7.7mm machine guns), and 38.4 for a U.S. P-51D Mustang (with six 12.7mm machine guns).²⁸

Before Italy entered the war, Italian air commanders were also aware of the problems posed by poor armament equipment for fixed defenses. They warned Mussolini and his Foreign Minister Galeazzo Ciano in May 1940 of the "wretched weapons" employed by the anti-aircraft defenses.²⁹ As Nicola Labanca has suggested, Italian anti-aircraft weapons might have been effective in a short war against one opponent with a weak air force; it could not be compared with German heavy anti-aircraft artillery, which enjoyed a wide technical margin over Italian equipment throughout the war. In a war against the British and American air forces, particularly after the failure of the Fascist campaign in North Africa, it became impossible to defend the peninsula effectively. Even German anti-aircraft defenses could interfere with, but not prevent, the bombing of German cities, while the Battle of Britain was won in the skies by fighter aircraft, not by the fixed anti-aircraft artillery.³⁰

According to Andrea Natalini, the reason why the *Regia Aeronautica* did not use more powerful armament was due to its conviction that the priority for air fighting was maneuverability. Italian pilots were exposed to propaganda that emphasized aerial acrobatics and this in turn supported the idea that they could achieve superiority over more heavily armed opponents because of the greater mobility of their aircraft. Although this school of thought proved effective during the Spanish Civil War and the war in Ethiopia, conditions during the Second World War were very different and adequate solutions were found only once it was too late. Besides the small caliber of air weaponry, Italian fighters were also produced with open cockpits, which significantly limited their activity operating over the North Sea or the Russian front.³¹ The open cockpit, together with the lack of a

27. Memoir of General and DiCaT commander Achille Gaspari Chinaglia, sent to the Air Ministry on 2 December 1938, MA, 1938, b. 28, cl. 3, scl. V, cartella 5, ACS.

28. Gregory Alegi, "Qualità del materiale bellico e dottrina d'impiego italiana nella Seconda guerra Mondiale: il caso della Regia Aeronautica," *Storia contemporanea* 18:6 (December 1987), p. 1201.

29. Galeazzo Ciano, entry for 3 May 1940, *Diario 1937–1943* (Milan: Rizzoli, 1998; first ed. 1946), p. 425.

30. Labanca, "L'esercito e la contraerea," pp. 135, 139, 131.

31. Natalini, *I rapporti tra aeronautica italiana e tedesca*, p. 11.

supercharged engine, also meant that fighters such as the Fiat CR.42, Fiat G.50, and Macchi C.200 were not able to reach altitudes much higher than 4,500-5,000 meters (around 15,000 feet).³² In preparation for the air war, the Air Ministry chose to commission G.50s and Meridionali Ro.51s, which were supposed to attain 6,000 meters (around 19,000 feet).³³ However, it was made clear that there were no facilities to mass-produce either of these or the MC.200.³⁴ In the end, just over 2,000 of the three fighter types were produced between 1937 and 1943, an average of fewer than 400 a year. By contrast, the British aircraft industry produced 38,000 fighter aircraft between 1939 and 1944.³⁵

Industrial Production

The regime's autarchic policies and Mussolini's ideological rejection of foreign investment had favored major Italian firms such as Fiat and Ansaldo over possible openings for foreign businesses. Ugo Cavallero, formerly president of Ansaldo, continued this trend when he replaced Badoglio as Supreme Commander of the armed forces in December 1940. To ensure that they retained their monopoly, Italian industrialists continued to raise the threat of labor unrest in case production was limited or interrupted. As a consequence, Fiat eventually produced 2,000 CR.42s (which replaced the CR.32 of the 1930s) between 1938 and 1944, a higher number than any other Italian fighter, even though it proved to be obsolete by the standards of other air forces.³⁶

In an analysis of the relationship between industry and the armed forces in the Second World War, Lucio Ceva argued that industrialists did not exhibit a deep commitment to the Fascist war, with the result that the regime was unable to mobilize the most important Italian industries as fully as necessary.³⁷ As Valerio Castronovo's work on Fiat shows, Italian industrialists took advantage of the state of non-belligerence declared by Mussolini in September 1939 to make deals with countries that would become Italy's enemies a year later. Moreover, they did not play the kind of leading role in Italian foreign policy that they had assumed in 1915.³⁸ Similar difficulties concerned the militarization of industry, established by a law of

32. Ibid., p. 24.

33. Air Ministry, "Promemoria. Osservazioni agli aeroplani prescelti per le commesse di previsione," 5 November 1937, MA, 1937, b. 25, cl. 3, s.cl. V, cart. 2, ACS.

34. Air Ministry to Air Chiefs of Staff, 19 July 1937, MA, 1937, b. 25, cl. 3, s.cl. V, cart. 2, ACS.

35. Christopher Dunning, *Courage Alone: The Italian Air Force 1940–1943* (London: Hikoki Publications, 2009), pp. 273–76; Ministry of Information, *What Britain has Done, 1939–1945: A Selection of Outstanding Facts and Figures* (London: Atlantic Books, 2007; originally published 1945), pp. 103–04.

36. MacGregor Knox, *Alleati di Hitler. Le regie forze armate, il regime fascista e la guerra del 1940–1943* (Milan: Garzanti, 2002), pp. 51–52.

37. Lucio Ceva, *Storia delle forze armate in Italia* (Turin: UTET, 1999), pp. 276–77.

38. Castronovo, *Fiat 1899–1999*, pp. 574–83.

18 June 1940, but subsequently repealed by another on 24 August 1941—an outcome that illustrated the weakness of a regime in constant search for popular support.³⁹ Mussolini's fear of losing popularity meant that no major changes were imposed on the home front when he decided to enter the war during the successful German campaign in France in June 1940. Despite requests by the armed forces, the dictator avoided any major attempt to enforce military discipline on the industrial working class until January 1943, in contrast to the actions of the Liberal ruling class in the First World War.⁴⁰

As Giorgio Rochat has noted, the problem was not merely one of means, but also of military culture. There was an immeasurable gap between, on the one hand, the ambitions, the propaganda campaigns, and the image of an internationally competitive aviation, and, on the other, the real industrial and financial capacities of the regime.⁴¹ Air defense was a clear example. In January 1940, General Carlo Favagrossa, head of the Commissariat for War Production, declared that an appropriate renewal of anti-aircraft artillery would only be achieved after 1945 at best.⁴² Although the Supreme Commander, Pietro Badoglio, together with the three service Chiefs of Staff, Domenico Cavagnari (Navy), Rodolfo Graziani (Army), and Francesco Pricolo (Air Force), tried to warn Mussolini about the armed forces' lack of preparedness (Pricolo even raised doubts about the usefulness of entering the conflict in summer 1940 given the technical difficulties of facing an air war), the decision to go to war was based solely on a political evaluation, as if it could somehow be won independent of military means. The declaration of war reflected wishful thinking that the regime was already on the winning side.⁴³

Industrialists, too, increasingly criticized air defense measures. In some cases, they observed that most plans to camouflage factories and power stations were not practical; anti-aircraft guns were needed instead.⁴⁴ This was not the only problem facing industry. The Air Ministry realized as early as April 1938 that the Italian aviation industry was hampered by a lack of modern machinery. But because of government concern about the morale of the working classes, it was considered dangerous to introduce machinery in order to begin mass production, as it would risk the unemployment of too

39. Andrea Curami, "L'industria bellica prima dell'8 settembre," *Italia contemporanea* 261 (December 2010), p. 673.

40. Knox, *Alleati di Hitler*, pp. 43–44.

41. Giorgio Rochat, *Le guerre italiane 1935–1943. Dall'impero d'Etiopia alla disfatta* (Turin: Einaudi, 2005), p. 231.

42. Lucio Ceva, *Guerra mondiale. Strategie e industria bellica, 1939–1945* (Milan: Angeli, 2000), p. 31.

43. Fortunato Minniti, "Profilo dell'iniziativa strategica italiana dalla 'non belligeranza' alla 'guerra parallela,'" *Storia contemporanea* 18:6 (December 1987), pp. 1158–59, 1163.

44. Informer's report, Bagnaia di Viterbo, 2 February 1940, Ministero dell'Interno (hereinafter MI), Direzione Generale Pubblica Sicurezza (hereinafter DGPS), Divisione Polizia Politica (hereinafter DPP), b. 210, ACS.

many skilled workers. Even though the Air Ministry warned the Air Staff that this might become necessary in order to facilitate the shift to mass production with the advent of war, little was done.⁴⁵ As a consequence of a mentality more sympathetic to traditional labor skills, no serial production was genuinely pursued in Italy; British, German, American, and Russian aircraft were standardized and mass-produced, but Italian aircraft were manufactured in small packets by what amounted to artisanal methods. The slow adaptation of Italian industry to the latest technology also resulted in the failure to construct more powerful engines as well as in delays in the production of onboard instrumentation, radio, and high-octane fuel.⁴⁶ By the autumn of 1939, all firms working for the Air Force continued to send requests for raw materials to the Air Ministry; the progressive exhaustion of such resources led the ministry to forecast a short-term production crisis.⁴⁷ While government directives insisted on incremental increases in production, material shortages threatened instead to slow it down.⁴⁸ Moreover, the Air Force was deemed to be third in order of precedence in granting supplies for the armed forces, behind the Navy and the Army.⁴⁹

Consistent with the regime's autarchic ideology and with Mussolini's idea of a "parallel war" alongside that of his German ally, the predominant feeling was that there was no need to ask Germany for direct assistance for Italy's air defenses; an excessively optimistic belief in Italian capacity to supply equipment meant continued reliance chiefly on Italian production. In April 1940, Italy's foreign minister, Galeazzo Ciano, instructed the Italian Ambassador to Berlin, Bernardo Attolico, to inform Hermann Göring that Italy, though satisfied with the 100 anti-aircraft batteries it had so far received from Germany, did not require further assistance since, "we already have at our disposal 425 anti-aircraft batteries and a total of 1,700 guns and around 5-6,000 anti-aircraft machine-guns." Moreover, Ciano concluded: "We are currently constructing the new and ultimate 90mm cannon."⁵⁰ Even when this argument became clearly unsustainable later in the war, Italian authorities still preferred to protect Italian interests. For example, although the Germans had been installing radar in Italy since 1941, in the summer of 1942, the Air Ministry, echoing an opinion expressed by the Ministry of Corporations, insisted that the establishment of a German Telefunken

45. "Potenzialità industriale," Air Ministry to Air Chiefs of Staff, 28 April 1938, MA, 1938, b. 28, cl. 3, scl. V, cartella 5, ACS.

46. Rochat, *Le guerre italiane*, pp. 232-33.

47. "Materie prime," Air Ministry to General Commissariat for War Production, 10 November 1939, MA, 1939, b. 33, cl. 3, scl. V, cartella 18, ACS.

48. "Assegnazione materie prime," Air Ministry to General Carlo Favagrossa, 13 November 1939, MA, 1939, b. 33, cl. 3, scl. V, cartella 18, ACS.

49. "Materie prime," Air Ministry, General Direction of Supplies, to the Ministry's Cabinet, 8 November 1939, MA, 1939, b. 33, cl. 3, scl. V, cartella 18, ACS.

50. Galeazzo Ciano to Bernardo Attolico, 4 April 1940, Ministero degli Affari Esteri, *Documenti diplomatici italiani* (hereinafter DDI), *nona serie, 1939-1943*, Vol. 3 (1 January-8 April 1940), p. 610.

factory in Italy would be damaging to Italian industrial interests and that it would be better to ask the German Air Ministry to give the contract to Italian firms so they could produce radar themselves.⁵¹ However, such attempts were short-lived and, following the shift from "parallel" to "subaltern" war, Mussolini's efforts to direct his own war and win victory in the Mediterranean without German assistance were replaced by ever-increasing requests for help from Italy's ally.⁵²

Preparation for War: The Defense of Industry and the Air Force

At the end of 1936, the War Ministry informed the DiCaT that it was currently impossible to defend the 152 industrial objectives that had been previously chosen, but that instead thirty-eight air bases and fifteen fuel and munitions depots had been selected for protection. Thus far, no defense had been envisaged for private firms working on aviation contracts because the ministry hoped that industrialists, subject to "an opportune action of propaganda," would agree to bear the costs. It was decided that the following was needed:

- 1) For fuel and munitions depots – anti-aircraft batteries of four 76mm heavy guns and units drawn from 139 20mm light guns.
- 2) For air bases – 370 20mm light guns. To this, 90 further units of 20mm light guns (equal to 20%) must be added.

Financially, this rather limited program of defense resulted in the following request:

For weapons:

1st installment – L. 20,000,000

2nd installment – L. 48,000,000

3rd installment – L. 12,000,000

For munitions:

Approximately L. 56,000,000 per year for four years.⁵³

Three years later, with the war in Europe underway, the War Ministry clarified that it was still not possible to specify when batteries of the new 75mm heavy anti-aircraft gun needed for the defense of air bases and aviation objectives might be available because that depended on how many industry would be able to deliver over the following two years.⁵⁴ Instead,

51. "Riproduzione in Italia di apparati radiolocalizzatori," Air Ministry to the Air attaché to the Italian Embassy to Berlin, 1 August 1942, MA, 1942, b. 23, cl. 2, s.cl. V, cartella 18 (Radiolocalizzatori), vol. II, ACS.

52. Knox, *Alleati di Hitler*, p. 30.

53. War Ministry to Chiefs of Staff for Territorial Defense, 30 December 1936, MA, 1937, b. 25, cl. 3, s.cl. V, cartella 4, ACS.

54. "Difesa contraerei aeroporti e obiettivi di interesse aeronautico," War Ministry, Territorial Defense, to the Ministry's Cabinet and to the Air Ministry, 8 November 1939,

these targets still depended on the 76mm gun, first used in 1916 during the First World War, and the light 20mm Breda guns laid down in the 1936 directive, neither of which were effective against modern, high-flying bomber aircraft.

One of the issues that particularly worried the Air Ministry was the concentration of Italian industry in the same geographical areas, which made it both more vulnerable to air attack and more difficult to defend. The need for some industrial relocation was recognized in a 1938 plan to disperse the aeronautical industries so that, by July 1940, 50% would be located to the north of the river Po and 50% to the south. At that point, industries north of the Po produced three-quarters of the total national output. Existing industries in the center-south that were worth maintaining would have to be augmented, and new industrial centers created, while some of the northern firms were to prepare for transfer to the south. The state would provide an extraordinary one-off contribution of one million lire towards the costs of industrial production on the condition that each affected firm would organize a partial move south.⁵⁵ No further documents on the matter confirm that the measure was successfully implemented by the intended date. Aviation firms were still resisting the dispersal of their production when heavy bombing began in the winter of 1942-43.

The idea that industrialists would voluntarily collaborate in the defense of the country out of patriotic duty was also at the heart of a decree discussed by the War Ministry in the summer of the same year, 1938. An agreement between the state and the Banca Nazionale del Lavoro facilitated loans to firms that needed to be defended in case of air attack; industrialists were expected to fund anti-aircraft batteries on their own behalf as an expression of their "responsible foresight" and their will to contribute to the higher good of the nation. This was deemed to be realistic given the "national climate created by the regime." Not only were industrialists called on to collaborate in the country's defense by organizing the anti-aircraft protection of their own factories, but they were also asked to surrender the defenses they thus acquired to the state, which, through the agency of the War Ministry and the DiCaT, would manage and operate them.⁵⁶ No documents show that this scheme was conducted successfully either.

A plan discussed by the Air Ministry a year later envisaged the need to defend sixty-two aviation objectives, including "fuel depots, munitions and air bases," at a cost of 244 million lire. The proposal was to begin with the fifteen most crucial objectives, which required a more modest 116 million

MA, 1939, b. 33, cl. 3, scl. V, cartella 25, ACS.

55. Promemoria of Air Ministry on industrial relocation to the South, 13 September 1938, MA, 1938, b. 28, cl. 3, scl. V, cartella 5, ACS.

56. "Schema di R. decreto legge. Approvazione della convenzione fra lo Stato e la Banca Nazionale del Lavoro circa il finanziamento della organizzazione per la difesa contraerea delle industrie e di altre attività nazionali," War Ministry, 8 August 1938, MA, 1938, b. 28, cl. 3, scl. V, cartella 5, ACS.

lire.⁵⁷ Badoglio brought the request to Mussolini's attention, and the latter agreed on an installment of 116 million lire for the air defense of air bases and other essential aviation targets in October 1939.⁵⁸ However, as a consequence of the increased price of raw materials and the rising wage costs of skilled labor, the DiCaT reported that such a sum only made it possible to organize air defenses to protect the following objectives:

- 1) The Study Center at Guidonia
- 2) Fuel depot at Fornovo Taro
- 3) Munitions depot at Collecchio (Parma)
- 4) Munitions depot at Monte Mannu (Samassi-Cagliari)
- 5) Munitions depot at Bassano in Teverina
- 6) Fuel depot at Novi Ligure
- 7) Munitions depot at Sanguinetto (Legnano)
- 8) Munitions depot at Tripoli (Bir Sbea)
- 9) Munitions depot at Bengazi (Regina)
- 10) Fuel depot at Porto S. Stefano.⁵⁹

In July 1939, the War Ministry warned the Supreme Commission of Defense and the Air Ministry that a minimum program for the air defense of aeronautical objectives would require 160 million lire and could not be completed before the end of 1941. This program included the acquisition of weapons that were considered "strictly indispensable," but some of which were still in the development stage: the new 90mm heavy anti-aircraft gun and 20mm light guns to cover six objectives of vital importance; 37mm cannons for twelve extremely important objectives; and 20mm light anti-aircraft guns for forty-eight important objectives.

By this stage, Italian engineers had developed what was generally regarded during the war as one of the finest anti-aircraft weapons, the 90mm heavy gun, which also later doubled as an anti-tank weapon. However, although more than 1,700 were ordered, only 539 were manufactured, and without effective radar control or proximity fuses for its shells, its full potential was never realized. In the end, Italian defenses relied heavily on the 1916 76mm model, of which almost 500 were produced during the war. Cost was certainly a key consideration. It was calculated that to provide an

57. "Difesa contraerei aeroporti e obiettivi di interesse aeronautico," War Ministry to the General Commander of the Armed Forces and to the Air Ministry, 20 September 1939, MA, 1939, b. 33, cl. 3, scl. V, cartella 25, ACS.

58. "Difesa contraerei aeroporti e obiettivi di interesse aeronautico," Pietro Badoglio to the Chiefs of Staff of the Army and of the Air Force, 15 October 1939, MA, 1939, b. 33, cl. 3, scl. V, cartella 25, ACS.

59. "Difesa contraerea degli obiettivi di preminente interesse della R. Aeronautica," War Ministry, Territorial Defense, to the Ministry's Cabinet and the Air Ministry, 29 November 1939, MA, 1939, b. 33, cl. 3, scl. V, cartella 25, ACS.

adequate program to meet aeronautical requirements would necessitate a total cost of 740 million lire. However, Mussolini made it clear that for the time being he could not assign any further funds for air defense and the fixed artillery continued to rely on obsolescent models.⁶⁰

The First Phase: 1940–1942

As Lucio Ceva has noted, the conditions under which Italy entered the war on 10 June 1940 could not be compared with the circumstances of May 1915, when Italy joined an international coalition sustained by colossal empires. Between 1940 and 1943, Italy's German ally, owing to the demands on its own resources made necessary by the extensive and brutal character of its imperialism, could only provide military and material assistance that barely guaranteed Italian survival.⁶¹ Resistance to Italian requests for machinery and weapons was evident from the beginning of the conflict. In the summer of 1940, Favagrossa raised with Mussolini the necessity of coming to a "totalitarian solution of raw material supplies" in order to avoid a situation in which Italy found itself in "constant conditions of inferiority to Germany," compelled to make continuous future requests for material.⁶² Exchanges in the spring of 1941 between the Italian foreign office, Italian diplomats in Berlin, and Hermann Göring showed that the German attitude did not in fact encourage Italian requests. At that time, Göring, head of the German Four-Year Plan organization, made clear that he would only authorize the shipping of machines that were not necessary for German war production, and only as long as they were "limited to the real needs" of the Italian armaments industry.⁶³

Italy's delays in preparing adequate air protection resulted in the fact that a number of early raids carried out by the RAF could not be countered effectively. RAF Malta reports on raids on southern Italian cities in the autumn of 1940 are eloquent. A raid on Naples during the night of 31 October/1 November found no enemy aircraft defending the city, "no searchlights and inaccurate anti-aircraft fire."⁶⁴ When ten Wellingtons attacked the port and fuel depots at Taranto on 13 November, they found "no searchlights, inaccurate anti-aircraft fire, no balloons and no enemy aircraft." So insignificant was the opposition that the RAF was able to bomb from much lower heights than usual (5,000–7,000 feet)—the usual bombing

60. "Difesa contraerei degli impianti e degli obiettivi di interesse aeronautico," War Ministry to the Supreme Committee of Defense and to the Air Ministry, 13 July 1939, MA, 1939, b. 33, cl. 3, scl. V, cartella 25, ACS.

61. Ceva, *Storia delle forze armate*, p. 275.

62. Favagrossa to Mussolini, 4 August 1940, DDI, Vol. 5 (11 June–28 October 1940), pp. 343–45.

63. Coordinating Office in Berlin to Ciano, 16 March 1941, DDI, Vol. 6 (29 October 1940–23 April 1941), p. 366.

64. HQ RAF Mediterranean to Bomber Command HQ, 11 November 1940, AIR 2/7397, The National Archives, London (hereinafter TNA).

height against heavily-defended targets was 15-20,000 feet.⁶⁵ Two days earlier, the British had scored a clear success when twenty-one Fairey Swordfish torpedo bombers attacked the Italian fleet at anchor in Taranto, sinking or seriously damaging three battleships and a heavy cruiser, and substantially diminishing the Italian threat to British vessels in the Mediterranean. The Italian press denied the damage to Italian vessels, reporting that enemy forces had failed to penetrate Italian defenses, or had been hit in retaliation. This policy of denial had a disastrous effect once the truth began to spread. Not only could the local population see the damage, which clearly contradicted articles in the southern newspaper *La Gazzetta del Mezzogiorno*, but news of Taranto traveled across Italy as soldiers stationed there were moved to military bases elsewhere.⁶⁶

During the same month, ten Wellingtons also bombed Bari, and RAF headquarters in Malta again reported that Italian anti-aircraft fire was inaccurate, and that there were no balloons, searchlights, or fighters; moreover, the blackout was poor in "all areas" and "trains well lit."⁶⁷ The fact that Allied reports usually mentioned weaknesses in both the active and passive defenses suggests that the two must be regarded as connected elements in Italy's lack of preparation for war. The difficulty of imposing respect for the blackout, for example, was mentioned in prefects' reports throughout the entire war period; RAF pilots crossing the Alps during the very first bombing operations in Italy were aware of this when they reported the welcome sight of Milan and Genoa fully illuminated.⁶⁸ Non-compliance with the blackout is evident not only from prefects' letters, but also from newspaper articles and numerous reports in the files of the Ministry of the Interior and the Air Ministry that cite problems of public order.⁶⁹ Although non-compliance need not be interpreted as a form of active opposition to Fascism, it was an indication of the population's poor commitment and limited willingness to adapt to the war situation. Although this article focuses mostly on Italy's military performance, the responses of both the population and military to the air war need to be seen as part of the same problem.

Before the raids of autumn 1940, Dino Alfieri, who had replaced

65. HQ RAF Malta to HQ RAF Mediterranean, 14 November 1940, AIR 2/7397, TNA.

66. See "Operazioni belliche e spirito pubblico," Prefect of La Spezia to Ministry of Interior, 15 November 1940; "La difesa di Taranto abbatté sei aerei nemici," *La Gazzetta del Mezzogiorno*, 13 November 1940, p. 1, MI, DGPS, Seconda Guerra Mondiale (IIGM), A5G, b. 25, ACS.

67. HQ RAF Malta to HQ RAF Mediterranean, 23 November 1940, AIR 2/7397, TNA; Richard Overy, *The Bombing War: Europe 1939–1945* (London: Allen Lane, 2013), p. 512.

68. Richard Overy, *Bomber Command, 1939–1945* (London: HarperCollins, 1997), p. 86.

69. Claudia Baldoli and Marco Fincardi, "Italian Society under Anglo-American Bombs: Propaganda, Experience, and Legend, 1940–1945," *The Historical Journal* 52:4 (2009), p. 1026.

Bernardo Attolico as Ambassador to Berlin in May, had sought to alert Joachim von Ribbentrop to the serious conditions Italy was facing, in particular its lack of raw materials and fuel. The German foreign minister replied that decisions were taken at the military level for unavoidable reasons and were not his responsibility; moreover, he raised concerns about rumors in Germany concerning the alleged incidence of low Italian morale and popular discontent.⁷⁰ In Germany, too, it was perceived that the Italian military and home fronts were not up to the task they faced. However, in order to defend their own bomber bases in Italy, established in the winter of 1940-41 and then extended to North Africa, the *Luftwaffe* deployed a number of anti-aircraft units there from April 1941 onwards. The German 10th Air Corps divided the units up as follows: "Catania – 5 batteries; Comiso – 5 batteries; Trapani – 4 batteries; Palermo – 1 battery; Catania/Reggio Calabria – 5 batteries; Sirte – 1 battery; El Mechili – 2 batteries."⁷¹ In addition to these units, the Reich Air Ministry in August 1941 offered the Italian Air Ministry five German balloons to be deployed "in one port in southern Italy."⁷²

German contributions played an influential role in the course of the war in the Mediterranean and North Africa. However, from June 1941, the invasion of Russia took priority and absorbed most of the *Luftwaffe's* energies.⁷³ As soon as the Germans withdrew some of their forces from Sicilian airfields, the responsibility for air defense fell to the *Regia Aeronautica*, a fact that resulted in increased British attacks from Malta on the Sicilian convoys.⁷⁴ By September 1941, for example, the air defenses at the air base at Comiso (which housed a great many fighters and bombers) were limited to four 20mm guns only capable of firing to a height of 2,000 meters (around 6,500 feet).⁷⁵

In October 1941, as the military campaign on the Eastern Front slowed down due to the worsening autumn weather, Hitler sent more air force support to southern Italy. At the end of November, Field Marshal Albert Kesselring moved to Italy to coordinate with the Italian military authorities, and, in December, the first groups of the II *Fliegerkorps* were established at the Sicilian air bases of Catania, Gerbini, Gela, San Pietro di Caltagirone, Sciacca, Trapani, and Comiso. On the mainland, the air bases of Bari and

70. Alfieri to Ciano, 13 September 1941, DDI, Vol. 7 (24 April–11 December 1941), pp. 567-69.

71. "Dislocazione Reparti di Volo del Corpo Aereo Tedesco," 15 April 1941, Box 14/E2545, Imperial War Museum (hereinafter IWM).

72. "Attrezzi per lo sbarramento aereo," Deutsche Botschaft des Luftattaché to War Ministry, 26 August 1941, MA, 1941, b. 50, cl. 3, s.cl. V, cartella 5, ACS.

73. Williamson Murray, *The Luftwaffe, 1933–1945: Strategy for Defeat* (London: Brassey's, 1996), pp. 74-100.

74. Natalini, *I rapporti tra aeronautica italiana e tedesca*, p. 77.

75. "Segnalazione," Fascist Party Inspector Angelo Manaresi, Coordinating Office to the Armed Forces (HQ in Littoria), to Air Ministry, 15 September 1941, MA, 1941, b. 50, cl. 3, s.cl. V, cartella 5, ACS.

Brindisi were made available for logistics and Capodichino at Naples for storage. The aim of all this was to ensure deliveries to North Africa, to support the troops deployed there, and to attack Malta. Over the following months, almost all air activity against Malta was carried out by the *Luftwaffe*.⁷⁶

As a result of the increase in German bombing bases, more anti-aircraft defenses were also brought to southern Italy.⁷⁷ Indeed, by the end of 1941, not all Allied raids on southern Italian cities were successful due, according to RAF reports, not only to a lack of accuracy on the part of the RAF but also to the fact that on a few occasions Italian defenses seemed to be improving—as demonstrated, for example, by the smokescreen over the port of Naples in early December.⁷⁸ Nevertheless, the majority of RAF reports continued to mention the lack of intense anti-aircraft fire, fighter attacks, and balloons. It was generally safe to bomb from 9,000 feet.⁷⁹

Instructions from *Superaereo* (the supreme command of the *Regia Aeronautica* from June 1940) to air bases throughout Italy in December 1941 made clear that much still needed to be done. Alongside the usual rhetorical claim that "the experience of war advises the organisation of the defense of air bases in a totalitarian fashion," the instructions established that the Army and Navy had responsibility for anti-aircraft artillery defense against high altitude bombers, while the Air Force was responsible for combating lower altitude attacks using fighter aircraft. Depending on the importance of the air base, a mix of 47mm anti-aircraft guns, 20mm cannons, and small and medium caliber batteries were to be delivered. The use of the future tense and absence of details about when the material might be provided must have generated a sense of uncertainty, since it was stated that deliveries would be gradual and depend upon availability, and that in the first instance the new defensive measures would only apply to the most important and sensitive ports—those under attack in that phase of the Mediterranean war in Sicily, Sardinia, and southern Italy, in particular.⁸⁰

Radar

Although Italian research and experiments with radar had been progressing in the interwar years alongside developments in Germany, Britain, and France, its realization was interrupted by the war, and was never given the

76. Natalini, *I rapporti tra aeronautica italiana e tedesca*, pp. 80, 86, 88.

77. "Difesa degli aeroporti," Air Chiefs of Staff, *Superaereo*, to Air commanders located in various parts of Italy, 1 January 1942, MA, 1942, b. 46, cl. 3, s.cl. V, cartella 11, ACS.

78. Note from Baker (Director of Bombing Operations, Air Ministry) to Admiral Sir Dudley Pound (First Sea Lord), 4 December 1941; HQ RAF Malta to Air Ministry (DBOps), 9 December 1941, AIR 2/7397, TNA.

79. HQ RAF Malta, report on Wellington operations 27-28 November 1941; HQ RAF Malta, report on Wellington operations 5-6 December 1941, AIR 23/5752, TNA.

80. "Difesa degli aeroporti," Air Chiefs of Staff, *Superaereo*, to Air commanders located in various parts of Italy, 3 December 1941, MA, 1942, b. 46, cl. 3, s.cl. V, cartella 11, ACS.

necessary priority by the military authorities.⁸¹ It was the *Luftwaffe* that brought radar to Italy, initially in order to cover Field Marshal Erwin Rommel's path to Tripoli early in 1941. However, no integrated system of defense between radar, fighters, and artillery (which would have meant coordination between Air Force, Army, Navy, and militia) was seriously discussed before 1942.⁸² In December 1941, a mixed committee consisting of officers from the three armed forces was created with the aim of organizing more effective air defenses. The establishment of a training center was proposed in order to support the technical education of personnel in the correct use of radar. The *Luftwaffe* undertook to provide its Italian counterpart with fifteen radar installations—five Freyas and 10 Würzburgs. The Freya model worked with a 2.4 meter wavelength and could detect aircraft up to a distance of 150km, while the Würzburg model functioned with a 50cm wavelength to a distance of 40km. The latter could determine the altitude of the aircraft as well as its geographical position. In practice, the two types complemented each other. Freyas could explore an entire area and identify oncoming aircraft; when these aircraft entered the radius of action of the Würzburg radar, their route could be followed with exact precision, making it possible to direct either the defending fighters or the anti-aircraft batteries.⁸³

The importance of radar was evident, since it could be used to direct both day and night fighters for interception of enemy aircraft. The installations had to be located near anti-aircraft batteries and connected by telephone to other batteries in the same area. However, the Italian embassy in Berlin exhibited some caution. First of all, as a letter to *Superaereo* explained, because the Würzburg radar manufactured by Telefunken would not be available before April 1942, ten similar experimental devices built by the German Lorenz company were to be sent to Italy instead. Secondly, although these were suitable for connection with anti-aircraft artillery, the connection would work only as long as the Italians had a fitting switchboard. At this point in the letter, a question mark was inserted, suggesting that there was little clarity in Italy about how to employ such instruments.⁸⁴

At the end of 1941, it was decided that three Freya devices were to be deployed respectively at Pantelleria, Lampedusa, and Tripoli in order to protect the convoys between Tripoli and Sicily; one at Capo S. Antioco in Sardinia to protect Sardinian bases; and one in the Rome area to integrate defense of the capital. The Würzburg units were to be assigned to the

81. Luigi Carillo Castioni, "I radar industriali italiani. Ricerche, ricordi, considerazioni per una loro storia," *Storia contemporanea* 18:6 (December 1987), p. 1222.

82. Knox, *Alleati di Hitler*, p. 76.

83. "Ricerca notturna degli aerei," Air Ministry to War Ministry, 11 December 1941, (Radiolocalizzatori), vol. I, MA, 1942, b. 23, cl. 2, s.cl. V, cartella 18, ACS.

84. "Radiolocalizzatori – Fornitura e corsi d'istruzione," Italian Embassy, Berlin, to Superaereo and Air Ministry, 26 November 1941, (Radiolocalizzatori), vol. I, MA, 1942, b. 23, cl. 2, s.cl. V, cartella 18, ACS.

protection of important bases that were likely to be subject to enemy air attack; to localities that, because of their geographical position, were suitable for Italian fighter interception; and to places that would complement identical installations already controlled by the Germans. It was thus decided that two of them would be installed near Rome (one at Anzio and one at Ostia) for the defense of the capital and for use by the new school to be created there, and one each at Naples, Pantelleria, Tripoli, Palermo, Bengasi, Crotona, Brindisi, and Cagliari. The first four Würzburg units were already on their way to Italy to be positioned at Anzio, Ostia, Naples, and Tripoli. However, it was recognized that in order to obtain useful results from the establishment of radar, it was necessary to begin training personnel. The first training courses for Italian personnel were established in Germany in November 1941, and were to be attended by ten groups, four organized by the Air Force, three by the Army, and three by the Navy.⁸⁵

The Berlin school of anti-aircraft artillery hosted an initial six-week course on the use of Würzburg radar starting in mid-December. Each team was composed of eleven members, four of whom were expected to be specialists. Meanwhile, the first Freya course began on 10 December at the Experimental Regiment of Telecommunications at Köthen and was also intended to last for six weeks, with teams composed in the same way. Italian personnel were required not so much to possess a firm practical knowledge of the field of high frequency technology but to demonstrate intelligence, mental acuteness, and the capacity to maintain the strictest secrecy. On top of these qualities, a good technical competence was, however, required of non-commissioned officers and some of the mechanical operators in each team. Some of the participants had to know German, although an interpreter was also necessary. In return for providing the course, the *Luftwaffe* asked that thirty technicians skilled in high frequency and forty skilled electrotechnical mechanics be sent from Italy for test and inspection works to be carried out in Germany. However, the Italian Air Force made it immediately clear that it would be impossible to release such a high number of skilled workers to meet German requirements.⁸⁶

Following the loss of much of the Italian empire in Africa by the end of 1941, it proved difficult to disguise evident discontent with the military situation and the Axis alliance among the military recruits for the courses in Germany—a predicament that provoked anxiety for the Italian Supreme Command. After the first courses had finished in March 1942, an alarmed Cavallero wrote to the Chiefs of Staff of the three armed forces, reporting cases of indiscipline by Italians sent to Germany and giving instructions on how to avoid these in the future. In addition to the necessary qualities already designated, Cavallero recommended a stricter selection with regards to standards of discipline and seriousness of intent, neither of which could

85. "Verbale relativo alla riunione tenuta il 14 dicembre 1941-XX per esaminare i problemi inerenti i radiolocalizzatori," MA, 1942, b. 23, cl. 2, s.cl. V, cartella 18, ACS.

86. "Radiolocalizzatori – Fornitura e corsi d'istruzione," 26 November 1941, ACS.

any longer be taken for granted.⁸⁷ The Air Ministry suggested appointing a team leader—the highest ranking, oldest, and most senior officer in each case—as disciplinary controller for each group.⁸⁸ From the very first days of the radar courses, it was understood that relations between German and Italian troops "had not been cordial." Besides a few impolite words, there had been an exchange of views on the war in which Italian soldiers demonstrated anti-patriotic opinions. It was observed that the mass of Italian soldiers were "educated to a formal discipline that was less correct than that of the German ones," and officers did not appear to be up to their task.⁸⁹ The personnel enrolled in the course, according to Cavallero, did not possess the necessary characteristics of military preparation and cohesion. Some of them, so it appeared, had even talked to German airmen about a separate peace and, ungrateful for the services provided by their allies, complained about the quality of the meals.⁹⁰

Despite the attempt to present these as isolated cases, a similar attitude among the Italians in Germany—whether on the part of emigrants or war workers—had been observed by Italian diplomats in Germany from the outbreak of war. The ambassador to Berlin, Bernardo Attolico, for example, had written to Foreign Minister Ciano a few days after the outbreak of the Second World War to warn him about an openly anti-German state of mind among the majority in the Italian communities living there, and the resentment this provoked among their German hosts. Attolico had even had to intervene with the Italian *Fascio* in Berlin, threatening to suspend its refectory and withdraw the Fascist party card from individuals in cases where they were involved in spreading anti-German rumors; elsewhere, he organized gatherings in an attempt to familiarize the local Italian population with the Fascist "catechism," and instructed consuls across the country on the need to control their communities.⁹¹ A year later, the new ambassador, Alfieri, informed Ciano that no serious selection process had taken place when sending Italian workers to Germany to replace German soldiers leaving for the front. Italian workers complained about almost every aspect of the limitations in daily life: food, clothing, heating, bedding, soap, alcohol, tobacco, and so on. The German population, he concluded, was

87. "Corso nell'impiego dei radiolocalizzatori," Supreme Commander Ugo Cavallero to the Chiefs of Staff of the Army, Navy and Air Force, 7 March 1942, (Radiolocalizzatori), vol. II, MA, 1942, b. 23, cl. 2, s.cl. V, cartella 18, ACS.

88. "Corso sull'impiego dei radiolocalizzatori," Air Ministry to the Supreme Commander, April 1942, (Radiolocalizzatori), vol. II, MA, 1942, b. 23, cl. 2, s.cl. V, cartella 18, ACS.

89. "Relazione (Riferimento al foglio n. 111 del 19 febbraio 1942-XX del Comando Supremo," 25 February 1942, (Radiolocalizzatori), vol. II, MA, 1942, b. 23, cl. 2, s.cl. V, cartella 18, ACS.

90. "Corso nell'impiego dei radiolocalizzatori," Cavallero to the Chiefs of Staff of the Army, Navy and Air Force, 19 February 1942, (Radiolocalizzatori), vol. II, MA, 1942, b. 23, cl. 2, s.cl. V, cartella 18, ACS.

91. Attolico to Ciano, 7 September 1939, DDI, Vol. 1 (4 September–24 October 1939), p. 48.

hostile because Italians were perceived to be doing safe jobs while Germans were dying at the front in part to defend Italian territory, an attitude that in turn only provoked further negative reactions among Italian workers.⁹² German mistrust was based not only on these reactions, both from Italians living in Germany and those who attended the training courses, but also from rumors about the Italian population's more general lack of support for the war and for the Axis alliance. The situation was exacerbated after it was revealed in a telegram from Colonel Giuseppe Teucci, air attaché in Berlin, to *Superaereo* in December 1941 that Italian firms had begun requesting warrants from German companies so that they could begin producing radar equipment themselves. German firms were extremely worried about the fact that the necessarily secret character of their products had evidently been ignored in Italy, since Italian firms should not have had access to the technical information in the first place. The Germans believed, with some justice, that Italian firms could not be trusted even to maintain the most basic level of confidentiality.⁹³

The Heavy Raids of 1942–1943

Comparing Italy's industrial mobilization and war production in the two world conflicts, Andrea Curami demonstrated that, while at the time of the battle of Vittorio Veneto in 1918 the armed forces fought with weapons and equipment that were substantial improvements on the equipment available in 1915, the Italian Army and Navy at the time of the 1943 armistice were using equipment that was qualitatively little different from the material available in June 1940. However, in the field of anti-aircraft defenses, particularly fighter aircraft, some significant improvements were made. The introduction of the Fiat G.55, Macchi 205V, and Reggiane Re.2005 brought aircraft into production that were finally the equivalent of Allied fighters, but only 391 of all three models together were produced from the spring of 1942 onward as shortages of raw materials and labor undermined any effort to modernize the force.⁹⁴ The demands of air defense meant that the Italian Air Force eventually privileged fighter production over the bomber sector. In 1940-41, there were two fighters produced for each bomber, but this ratio was increased to nine fighters for every bomber in 1942, and 5.4 to one in 1943. The main efforts in fighter production and innovation thus emerged only in 1942 when it was clear that the Italian Air Force had to concentrate almost exclusively on defensive needs.⁹⁵

In November 1942, after the first area bombardment of northern Italian

92. Alfieri to Ciano, 3 October 1941, DDI, Vol. 7 (24 April–11 December 1941), pp. 625-26.

93. Telegram from Teucci to *Superaereo* and the Air Ministry, 18 December 1941, (*Radiolocalizzatori*), vol. I, MA, 1942, b. 23, cl. 2, s.cl. V, cartella 18, ACS.

94. Curami, "L'industria bellica prima dell'8 settembre," p. 667.

95. Fortunato Minniti, "Il problema degli armamenti nella preparazione militare italiana dal 1935 al 1943," *Storia contemporanea* 9:1 (1978), pp. 38, 40.

cities by the RAF, Air Force leaders as well as a number of industrialists began to realize that both day and night attacks from "stratospheric" altitudes were now to be expected all over Italy. It had become clear that the existing anti-aircraft artillery was ineffective against high-altitude raids which were flown beyond their range; the same was true of the existing fighter force. Although new fighters were being produced, it proved impossible to build them in high enough numbers to allow their employment across every vulnerable zone. Instead, Air Force authorities fell back on older solutions. The general inspector of aeronautical engineers instructed Italian firms to "cover ourselves in the best possible way by other means, such as, for example, the acoustic detection service" to make sure the alarm was sounded in time. In an illustration that the employment of radar was still negligible, he argued that acoustic detection was likely to be easier at night when it was not possible to rely on visual sighting systems. He also advised factory owners to distribute bags of sand, considered the best solution for extinguishing incendiary bombs in the first instance, as well as increasing the number of fire-fighting teams. With little understanding of radar and little confidence in the new fighters, which were indeed never mass-produced, the Air Force still relied on traditional methods of detection at a time when the RAF had already embarked on campaigns of area bombing by night, to be joined in 1943 by heavy daylight raiding from the United States Army Air Forces.⁹⁶ The seriously damaged areas of the Fiat Mirafiori plant in Turin after the raids in autumn 1942 measured more than 110,000 square meters. The bombing of Fiat, which had previously been thought sufficiently defended by both Italian and German anti-aircraft guns, became symbolic of the impending disaster. Almost half of Turin's inhabitants began to move to the countryside. By January 1943, as a result of the raids, diminished supplies from Germany, and transport deficiencies, Fiat was producing at just above 40% of its capacity. After having repeatedly warned Mussolini about the disastrous state of the war industry, Cavallero was replaced as Chief of the Supreme Command by Vittorio Ambrosio.⁹⁷

Another reason for the delays in war production was a lack of manpower. Curami calculated that, in April 1942, across all Italian regions, there were only 10,214 workers available, of whom 1,157 were skilled, 2,087 qualified, 6,255 were apprentices and only 715 were ordinary manual workers. Such numbers could not remotely meet the needs of the aviation industries, which had advanced an astonishing request for between 52,000 and 67,000 additional workers.⁹⁸ In March 1942, the War Ministry endorsed an Air Ministry request for the following personnel as a matter of urgency to help

96. "Suggerimenti e norme in materia di organizzazione contraerea e di difesa contraerea," General Inspector of Aeronautical Engineers Cristoforo Ferrari to a number of firms (among which Alfa Romeo), 10 November 1942, MA, 1942, b. 46, cl. 3, s.cl. V, cartella 20, ACS.

97. Castronovo, *Fiat 1899–1999*, pp. 599, 605.

98. Curami, "L'industria bellica prima dell'8 settembre," p. 672.

organize the radar services and the air defense of Italian cities: twenty-six junior officers of good breeding and well-informed on electrotechnical matters; thirty non-commissioned officers with similar characteristics, including at least a middle school diploma, preferably in an industrial discipline; and 2,500 students from the last year of high school, again preferably from industrial schools.⁹⁹ However, the Supreme Command reported that the Army and the Navy could not spare any personnel for the Air Force and, therefore, the only option was to send an unspecified number of students.¹⁰⁰

On 29 January 1943, Mussolini and the military leadership met at the Palazzo Venezia to discuss how to strengthen the power of the armed forces. Cavallero expressed alarm that the number of soldiers required continued to increase. Of the eight to nine million men eligible for the armed forces, one million had obtained exemption for one reason or another. This was not sustainable, he emphasized, "as we are at war against the three greatest industrial powers in the world." Among other problems, Mussolini discussed air defense and, in particular, the situation facing the fighter arm: there were only 168 Macchi C.202 and 234 Macchi C.200 aircraft available, and, by then, both of these planes were outdated, as were the Fiat CR.42 biplanes. Even when new aircraft models of superior performance were developed, particularly the Macchi 205V, Fiat G.55, and Reggiane Re.2005 with advanced armament, industry was unable to mass produce them because of a shortage of appropriate aero-engines. The dictator ignored proposals by the heads of the three forces, such as the need to militarize industrial workers, because he lacked the courage to increase workers' hours.¹⁰¹ Mussolini's attitude was not unjustified. Unrest had already begun to spread in the factories in January, foreshadowing the mass strikes of March 1943. Between November 1942 and February 1943, firms that performed contract work for Fiat were either destroyed beyond repair or forced to move out of Turin. The RAF attacks of 21 November and 8-9 December on Turin destroyed the assembly lines for the CR.42 and the MC.205 of Aeritalia, with serious repercussions on their future production.¹⁰² The overall damage from bombing by 31 December amounted to 250 million lire, but the Fiat management was less worried about the cost of bombing than about low morale in their workforce.¹⁰³

99. "Personale specializzato per il funzionamento dei radiolocalizzatori," War Ministry, Cabinet, to the Direction of Officers Personnel and the General Army Direction, 27 March 1942, (Radiolocalizzatori), vol. II, MA, 1942, b. 23, cl. 2, s.cl. V, cartella 18, ACS.

100. "Personale specializzato per il funzionamento dei radiolocalizzatori," Supreme Commander to War Ministry and to the Air Ministry, 19 March 1942, (Radiolocalizzatori), vol. II, MA, 1942, b. 23, cl. 2, s.cl. V, cartella 18, ACS.

101. Curami, "L'industria bellica prima dell'8 settembre," pp. 674-79.

102. Arena, *La Regia Aeronautica, 1939-1943*, Vol. 3, 1942. *L'anno della speranza* (Rome: Stato Maggiore Aeronautica – Ufficio Storico, 1984), p. 745.

103. Baldoli, "Spring 1943: The Fiat Strikes and the Collapse of the Italian Home Front,"

Allied bombers continued to find Italian defenses relatively easy to overcome until the fall of the regime. A report on air activity in December 1942 revealed that, during daytime raids over Naples by American bombers, alarms had sounded at the wrong time and fighters had arrived too late. Subsequent reports for January and May 1943 showed that there was little aviation fuel available, that there were too few fighters, and that those available generally arrived too late because there was no radar for advanced warning.¹⁰⁴ A concluding remark by the operations office of the Italian Air Force suggested that the situation was doomed by March 1943: "The means that Italy can devote to the defense are and will continue to be both numerically and technically deficient with regards to the offensive capacity of the enemy."¹⁰⁵

Aware of the inexorable superiority of enemy air power, Mussolini had personally asked Hitler for help after the heavy raids of autumn 1942. He denied that these had had any effect on the population's morale, but admitted that they were dangerous in terms of the material damage caused to Italian industry. Confessing that the relocation of industry planned before the beginning of the war had not made any progress, he reminded the *Führer* that most Italian factories were concentrated in the same areas and that it was easy for the enemy to reach them. Whatever the season, days and nights were generally clear of cloud cover, making bombing operations much easier than in German air space. Mussolini begged for a renewed supply of air defenses, especially anti-aircraft batteries, to be returned to Germany as soon as Italian substitutes had been produced—a form of Axis Lend-Lease.¹⁰⁶ Hitler's prompt response, besides reminding the *Duce* of Germany's superior experience in the matter of air defense, suggested that he was willing to move artillery from German cities to Italian localities in need, only requesting that the Italian Air Force train the crews to man them.¹⁰⁷

Things might have proved easier if, by 1943, Italy had developed modern night fighters. Their importance had been stressed since Italy's entrance into the war when the official journal of the Air Force, *Rivista Aeronautica*, sought to persuade its readers that a night fighter force was no longer a chimera, but was instead achievable. In October 1940, moreover, aviation engineer Guidantonio Ferrari had written that it would soon be possible to "establish—between fighters and defense positions on the ground—a connection that will allow the pilot during night flights to receive all the

History Workshop Journal 72 (2011), p. 185.

104. Reports on air activity for December 1942, January and May 1943, Box 2/E2485, IWM.

105. Air Ministry Operations Office, Memorandum, 5 March 1943, Box 1/2470, IWM.

106. Mussolini to Hitler, 19 November 1942, DDI, Vol. 9 (21 July 1942–6 February 1943), pp. 321–22.

107. Hitler to Mussolini, 20 November 1942, DDI, Vol. 9 (21 July 1942–6 February 1943), p. 329.

useful information to ease the search and sight of enemy aircraft."¹⁰⁸ Two years later, even though Italian night fighters had not yet been produced, the same journal continued to indulge in the same rhetoric. General, pilot, and air theorist Amedeo Mecozzi wrote in the summer of 1942 a fascinating but mendacious account of the Italian air war, according to which Italian fighters were now combating the bombers both by day and by night "at both low and stratospheric altitudes"; by dominating the situation in the air, he continued, they were able to dominate the related battles both on the ground and at sea.¹⁰⁹ In fact, throughout the duration of the conflict, Italy could only adapt night fighters from planes that had been created for use during the day.¹¹⁰ Here, too, Italy had to rely on German initiatives. A new Axis agreement in January 1943 established the positioning of German night fighters in Tunisia, Sicily, and Calabria; in June and July, the agreement extended all along the Adriatic coast; and, in August, after the fall of Mussolini, night fighters were stationed near industrial areas in the north at Venice, Turin, Milan, and Genoa.¹¹¹

This was not the only problem to arise. It proved difficult to find a suitable radio wavelength for communication between converted Italian night fighters, ground stations, and the fixed defenses.¹¹² New criteria for collaboration between fighters and artillery needed to be established as a matter of urgency since, by March 1943, it had become clear that at times German planes shot Italian fighters down by mistake.¹¹³ Two months later, the Air Ministry sent a note to Mussolini about the need to reorganize night defenses, stating that it was necessary in key localities to link local night fighter commanders with air defense command (*Comando Tattico Coordinatore*) to ensure closer collaboration. The system was already working in Milan, but had yet to be introduced in Turin, Rome, Genoa, Naples, and Taranto.¹¹⁴ The German point of view was that the DiCaT command was not following the correct procedure. In March 1943, the 5th Flak Division reported that the DiCaT at Milan and Turin instructed Italian units that at night or in bad weather they should only open fire when they were certain that enemy aircraft were over the objective; as the bombs began to drop at the latest. The Germans considered such delays to be inopportune;

108. Guidantonio Ferrari, "Caccia notturna," *Rivista Aeronautica* 16:10 (October 1940), p. 57.

109. Amedeo Mecozzi, "Sintesi di questa guerra," *Rivista Aeronautica* 18:8 (August 1942), p. 41.

110. Arena, *La Regia Aeronautica, 1939–1943*, Vol. 1, p. 89.

111. "Caccia notturna – Zone di sbarramento," Air Chiefs of Staff to Regia Aeronautica, Anti-Aircraft Defense, Box 3/E2489, IWM.

112. "Armamenti aerei," Superaereo to Air Chiefs of Staff, 1 December 1942, Box 3/E2489, IWM.

113. "Collaborazione fra caccia notturna e artiglieria c.a.," Supreme Commander, Army Operations Office, 15 March 1943, to all services and Air Chiefs of Staff, Box 3/E2489, IWM.

114. "Appunto per il Duce," Air Ministry, May 1943, Box 3/E2489, IWM.

in Milan, Turin, Genoa, and Naples, German units were present with their own radar, which allowed them to fight enemy aircraft even in poor visibility.¹¹⁵ This explained why German anti-aircraft fire had sometimes shot down Italian fighters which, since they intervened at the wrong time, were flying at their own risk.¹¹⁶ The *Luftwaffe* decided to deal with the issue in April 1943, organizing a meeting in Rome on the collaboration between day and night fighters and anti-aircraft artillery. *Superaereo*, in agreement with the Supreme Command and the DiCaT, was asked to send a representative.¹¹⁷ It is evident from these documents that everything was decided by the *Luftwaffe* and that the Italian air defense organizations were simply instructed on how to behave.

Eventually, it was established that the artillery should stop firing once it had been recognized that fighters had taken off to counter enemy planes. At night, however, the artillery had priority, and fighters had to stay out of the area; they had to be ready to intervene by attacking enemy aircraft either before they entered the area covered by artillery, or after. A total or partial suspension of fire could only occur when there was a direct link between the tactical command of night fighters and the local command of the air defenses, and when the commander of the anti-aircraft artillery imposed a ceasefire after receiving information on night fighters from the designated officer. The local artillery commanders had to contact the fighter commands responsible for their own area and inform them about the borders of the area defended by anti-aircraft artillery. A direct telephone link was thus necessary between artillery and fighters.¹¹⁸ The lack of coordination between fighters and defense activity on the ground was in fact never resolved, even though Francesco Pricolo had insisted as early as February 1940 on its critical necessity when he wrote in *Rivista Aeronautica* that "the air force operates in the sky but lives on the ground That is to say that the air force does not act, in fact it does not exist, without [ground] services that provide the chance of quick ... enactment of its efficiency."¹¹⁹

The lack of coordination between the different areas of the air defense system was also due to the absence of a unitary command structure and a

115. "Difesa c.a. in tempo di cattiva visibilità," German Office for the Training of anti-aircraft artillery, attached to the Italian Armed Forces, to the Army Chiefs of Staff, Anti-Aircraft Defense Office, 15 March 1943, Box 1/2476, IWM.

116. Chief of Staff to General Presso, 20 February 1943, Box 1/2470, IWM.

117. General Command of the *Luftwaffe* to the Italian Supreme Command, to Chiefs of Staff for the Territorial Defense, to the Air Chiefs of Staff and to *Superaereo*, 7 April 1943, Box 1/2470, IWM.

118. "Collaborazione fra l'artiglieria c.a. e la caccia," Appendix, General Command of the *Luftwaffe* to the Italian Supreme Command, to Chiefs of Staff for the Territorial Defense, to the Air Chiefs of Staff and to *Superaereo*, 7 April 1943, Box 1/2470, IWM.

119. Francesco Pricolo, *La Regia Aeronautica nella Seconda Guerra Mondiale, novembre 1939–novembre 1941* (Milan: Longanesi, 1971), p. 190. See also Sebastiano Licheri, *L'arma aerea italiana, 10 giugno 1940–8 maggio 1945* (Milan: Mursia, 2000; first ed. 1976), p. 229.

single overall commander for the air defense effort of the three armed forces. As Richard Overy has observed, fighters were supposed to defend during the day (even at the time when most raids were at night) and anti-aircraft artillery at night, but they were not coordinated at the local level under the same command, since fighters were a branch of the Air Force and anti-aircraft artillery a branch of the Army.¹²⁰ The question was still being debated in the spring of 1943, when the Supreme Command wrote to the Army, Navy, and Air Force staffs that "the issue of unitary command is fundamental, and must be resolved without compromises. With the current organisation it is difficult sometimes to achieve timely coordination of all the means of defense."¹²¹ The Naval staff agreed that a better coordination was necessary but that this could only be achieved gradually, and not at that particular moment, in order to avoid shocks to the fragile air observation system.¹²² The Air Force staff, on the other hand, agreed to support a system of unitary command only as long as it was entrusted to an air officer.¹²³ A centralized direction was only agreed to in 1943 with the constitution of the National Corps of Air Sighting and Signaling (*Corpo Nazionale di Avvistamento e Segnalazione Aerea*, CNASA), which was entrusted with the task of launching the much-needed unification process—but at that late point, Italy had already signed the armistice.¹²⁴

Besides these specific Italian problems, German help continued to be too limited to have any significant effect. In March 1943, Foreign Office Undersecretary Giuseppe Bastianini wrote to Alfieri to inform him that almost all of Italy's requests for military materials had been ignored. This was particularly unfair, he believed, considering the situation within the enemy coalition, in which material was constantly exchanged between the United States, the British Empire, and the Soviet Union. Germany's parsimoniousness towards Italy, despite the fact that they shared a common interest, and despite the fact that Germany well understood Italian needs, had, he concluded, produced serious morale and material damage.¹²⁵ *Superaereo* had recently raised the problem in terms of air defenses, particularly because of Italy's desperate need for night fighters. The few that had been sent from Germany, Dornier Do.217s, were deemed to be old and inefficient; while rejecting these criticisms, the *Fliegerkorps* responded that, in any case, they had no better aircraft to offer.¹²⁶ By the first half of 1943,

120. Overy, *The Bombing War*, p. 514.

121. "Difesa contro-aerea," Supreme Command to Superesercito, Superaereo and Supermarina, 13 March 1943, Box 1/2470, IWM.

122. "Difesa contraerea," Navy Chiefs of Staff to the Supreme Command, to Superesercito and Superaereo, 15 April 1943, Box 1/2470, IWM.

123. Air Chiefs of Staff, Aerial Defense, to the Supreme Command, 11 April 1943, Box 1/2470, IWM.

124. Arena, *La Regia Aeronautica, 1939–1943*, Vol. 1, p. 73.

125. Bastianini to Alfieri, 17 March 1943, DDI, Vol. 10 (7 February–8 September 1943), pp. 161–62.

126. "Fornitura di aeroplani Do. 217," Superaereo to Air Ministry, 28 February 1943;

Germany had indeed began to slow down the promised level of support, not only because anti-aircraft defenses were now much needed in Germany and on the Eastern Front, but also because Italy's conditions were so hopeless that there seemed to be no way of connecting German and Italian anti-aircraft artillery because of the lack of an effective military telephone service. Many German defenses were moved back to Berlin, leaving Italian cities and strategic targets dangerously exposed.¹²⁷

By June 1943, Alfieri was writing to Bastianini in despair: "Why ... do the Germans not resolve to send Italy the indispensable means—especially aircraft—to provide an effective and timely contribution?" One possible reason, he had ascertained, was that they no longer had the capacity to do so. While Goebbels spoke of the will for unlimited resistance in Europe, he did not seem to consider the profound differences between the actual situation and material capabilities of the two Axis countries.¹²⁸ On 13 July 1943, confronted with the invasion of Sicily, Hitler wrote to Mussolini that he had decided to send more bombers, fighters, and anti-aircraft artillery to the island. However, he emphasized that in return, the Italians had to create a sufficient ground organization in Calabria. He was aware that Italian resistance to such organization—caused both by shortages of personnel and a lack of assistance from local authorities—had been a problem throughout the war, and that it had prejudiced the employment and consolidation of German aviation in Italy. Hitler complained to Mussolini that deficient Italian defenses and coordination had meant that in recent weeks enemy bombers had destroyed more than 320 German fighters in Sicily and southern Italy. He concluded by imploring the *Duce* to eliminate the practical obstacles and—rather humiliatingly for the Italian dictator—to ensure that "your forces in Sicily also fight until the very end for the defense of the island, as the latter can only be held through the common combat of our troops."¹²⁹ Although the activity to counter enemy occupation of Pantelleria and Lampedusa was almost exclusively conducted by the *Luftwaffe* (the *Regia Aeronautica's* actions were limited to only two attacks by eight or nine MC.200s on 8 and 11 June),¹³⁰ a resentful Alfieri told Bastianini that Germany would not commit itself fully against the Anglo-American invasion of Italy because its main effort was against Russia. He concluded that Germany was no longer strong enough to fight fully in Italy but instead sought to encourage Italy's heroic resistance while providing only limited means. Since aid arrived only in small amounts and usually too

"Relazione stato efficienza velivoli Do. 217," Air Ministry to Air Attaché to the Italian Embassy, Berlin, 29 January 1943, MA, 1943, b. 156, ACS.

127. Labanca, "L'esercito e la contraerea," p. 140.

128. Alfieri to Bastianini, 7 June 1943, DDI, Vol. 10 (7 February–8 September 1943), pp. 523–24.

129. Hitler to Mussolini, 13 July 1943, DDI, Vol. 10 (7 February–8 September 1943), pp. 652–54.

130. Natalini, *I rapporti tra aeronautica italiana e tedesca*, p. 110.

late, it proved insufficient to alter the course of events in what was a continuously deteriorating situation.¹³¹

Conclusion

As General Rino Fougier, Air Force Chief of Staff from November 1941, admitted in June 1943, night fighters in Italy were "still at a stage of formation; the absence of visibility at night was only compensated for by a few electronic instruments of limited capacity."¹³² The first competitive Italian fighters—the MC.205, Re.2005, and Fiat G.55—became available in small quantities only in the summer of 1943, just before the final collapse.¹³³ Between January 1940 and May 1943, fighters had been produced in higher numbers than any other type of aircraft, demonstrating that defense was the priority. Altogether, 10,345 planes had been produced, of which 4,310 were fighters. As to fighters themselves, Lucio Ceva calculated that 1,155 were produced in 1940; 1,139 in 1941; 1,488 in 1942; and 528 in 1943.¹³⁴ In qualitative terms, the only production of any value was of fighters. Produced in 1941, the Macchi C.202 was useful in terms of speed (600 km per hour) and maneuverability, although weakly armed (the usual pair of 12.7mm machine guns); the Re.2001 was slower (545 km per hour), but slightly better armed (with two 12.7mm and two 7.7mm machine guns). All the series 5 fighters—the Macchi 205V, Fiat G.55, and Re.2005—were excellent in terms of speed (650 km per hour on average) and well armed with 20mm cannon as well as two 12.7mm machine guns, each of them capable of matching Allied machines. However, only the Macchi 205V saw limited employment in the first months of 1943, while the other two did not have time to be used before Italy surrendered. Moreover, they were still interceptors, with a flight capability of about one hour, while the issue of a heavier fighter with greater endurance and firepower, capable of carrying an airborne radar and operator, remained unresolved.¹³⁵ The most striking aspect, however, was the enormous gap between Italy's production and that of its enemies. In 1943, for each Italian aircraft, the Allies produced forty-five—eleven British, twenty-eight American, and six Russian. German and Japanese production, though much inferior to that of the Allies, was ten times higher than the Italian. Moreover, German deliveries, always less than promised, were calculated to be sufficient to discourage an independent Italian role.¹³⁶ As MacGregor Knox has shown, between 1940 and 1943, the Italian air forces received 10,389 aircraft, while German and American

131. Alfieri to Bastianini, 14 July 1943, DDI, Vol. 10 (7 February–8 September 1943), pp. 659–60.

132. Fougier to Head of the Police Lorenzo Chierici, 15 June 1943, MA, 1943, b. 45, cl. 3, scl. V, cart. 5/1, ACS.

133. Knox, *Alleati di Hitler*, p. 54.

134. Ceva, *Storia delle forze armate*, p. 350.

135. *Ibid.*, p. 351.

136. *Ibid.*, p. 352.

production in the same period was, respectively, 62,239 and 157,000 aircraft. More than any other factor, the destiny of Italy's war was thus decided by those figures.¹³⁷ Following a meeting with Fougier in September 1942, Ciano had gathered that "between us and Germany we cannot produce more than one fifth or one sixth of what the Allies are producing. The recruitment of pilots is also scarce and second-rate. By the summer of 1943 air supremacy will be solidly in Allied hands."¹³⁸

The story of Italian air defenses, whether fighter aircraft, artillery, radar, or civil defense, reflected many of the failures of the Fascist regime itself. Mussolini's strategy forced Italy to assume military responsibilities and economic commitments which it could not hope to meet in a situation where the world's trade routes were dominated by the enemy, and the only major ally, Germany, had too many commitments of its own. Moreover, industrial self-interest and inter-service rivalry combined to inhibit even more the efforts of the regime to protect its population, maintain adequate armaments output, and compete in technical terms with the Allies. The contrast between Italian air defenses and the sophisticated German system, the most elaborate and effective air defense system in the world by 1943, represented in stark terms the contrast between the two wartime Allies. The cost of these deficiencies was ultimately borne by the Italian civilian population who, in the end, suffered more than 60,000 deaths from bombing and endured years of terror and hardship, for a war with which a great many of them had never identified.

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137. Knox, *Alleati di Hitler*, pp. 58–59.

138. Ciano, *Diario 1937–1943*, p. 649.